

being adapted to receive a particulate feed material comprising an effective amount of particles of polymers meltable at operating conditions [ , the feed material being fed to an inlet port at an end of the mixing chamber from a screw feeder] and to deliver the feed material to the mixing chamber;

- (b) shaft extensions secured to the shaft by slot means for removing the shaft extensions when the mixing chamber is emptied and the shaft is stopped, the slot means comprising a single rectangle slot located at a base of the shaft extensions where a forward edge of the slot in the direction of rotation of the shaft has a relatively smooth transition to an outside surface of the shaft and a rearward edge of the slot is substantially stepped down from the outside surface of the shaft;
- (c) [rotating the shaft at relatively high speed until substantially all the polymer particles melt by heat generated by impingement of polymer particles on the shaft extensions and the inside surface of the mixing chamber so that a blend is formed with other portions of the feed material to form a molten mass of substantially uniform consistency and capable of being compression molded] a door located substantially spaced apart from and between the ends of the mixing chamber and along a bottom surface of the mixing chamber; and
- (d) [opening a door at a bottom part of the mixing chamber and releasing the molten mass from the mixing chamber] the door being adapted to open after the feed material is mostly melted and mixed together so that the feed material can drop from the mixing chamber; and
- (e) stopping the shaft from rotating and removing from the shaft one or more of the shaft extensions].

10. (Thrice amended) A [method for using a] thermokinetic mixer comprising:

- (a) a substantially cylindrical mixing chamber with an inside surface enclosing a shaft [rotating] connected with a motor driver outside the mixing chamber and rotatable at relatively high speed substantially about [the] an axis of the cylindrical mixing chamber, the mixing chamber [being fed] having an opening at a first end of the cylinder that communicates with a screw feeder, where the

screw feeder comprises screw blades mounted on an extension of the shaft and are enclosed with a cylindrical housing open at an inlet port, the screw feeder being adapted to receive a particulate feed material comprising an effective amount of particles of polymers meltable at operating conditions [, the feed material being fed to an inlet port at an end of the mixing chamber from a screw feeder] and to deliver the feed material to the mixing chamber during rotation of the shaft;

- (b) four or more shaft extension rows equidistantly spaced around the length of the shaft in the mixing chamber, where each shaft extension row consists of three or more shaft extensions arranged in a row lengthwise on and extending radially from the shaft, each shaft extension comprising a major tooth face oriented such that during rotation of the shaft the major tooth face passes through a plane including the shaft axis first at a sharp leading edge and thereafter only along a substantially flat or slightly curved surface extending from the leading edge rearward from the leading edge and at an [acute] angle of from 20 degrees to 70 degrees rearward from the plane, whereby when the shaft is rotated at high speed, the orientation of each major tooth face is adapted to strike more than a majority of the feed material particles that strike the shaft extension [and more than a majority of those particles strike the major tooth face] causing them to be substantially all driven to a side of the shaft extension opposite the leading edge;
- (c) [rotating the shaft at relatively high speed until substantially all the polymer particles melt by heat generated by impingement of polymer particles on the shaft extensions and the inside surface of the mixing chamber so that a blend is formed with other portions of the feed material to form a molten mass of substantially uniform consistency and capable of being compression molded]  
each shaft extension further comprising a top extension surface extending rearward from the direction of shaft rotation, the top extension surface being a solid surface defined by the boundaries of: